Michigan Department of Transportation

**ENGINEERING OPERATIONS COMMITTEE**
**MEETING MINUTES**
**DECEMBER 1, 2005 – 9:00 A.M.**
**MULTI-MODAL CONFERENCE ROOM**

| | | | |
|---|---|---|---|
| *Present:* | L. Tibbits | J. Friend | J. Polasek |
| | J. W. Reincke | J. D. Culp | M. Chaput |
| | T. Fudaly | C. Bleech | |
| *Absent:* | B. O'Brien | M. VanPortFleet | C. Roberts |
| | E. Burns | | |
| *Guests:* | B. Krom | D. Needham | R. Cadena (for M. VanPortFleet) |

OLD BUSINESS

1. **Approval of the Minutes of the October 6, 2005, Meeting – L. Tibbits**

   The minutes of the October 6, 2005, meeting were approved.

2. **Local Agency Aesthetic Cantilever Break-Away Light Standards (See September 1, 2005, Meeting Minutes, New Business, Item 1) – J. Culp**

   After discussion at the September meeting, the issue was referred to the Barrier Advisory Committee (BAC) for their consideration. The following is a brief summary of their response to the three concerns or questions posed to them.

   The Michigan *Road Design Manual* specifies lateral offset guidelines for light standards. If the speed limit is 35 mph or greater and the minimum lateral offset cannot be satisfied, then "frangible devices" shall be used. If the speed limit is less than 35 mph, minimum lateral offsets are recommended depending on the type of curb and gutter present. However, if the offset cannot be met, breakaway bases are not specifically mandated and are not crucial on low speed roadways.

   Most of the streetscape projects reviewed by the Local Agency Unit involve low speed streets with curb and gutter sections. Thus, breakaway bases are not required; however, a two foot offset is maintained.

   For breakaway units supplied to local agencies or MDOT, requiring an acceptance letter from FHWA certifying that a proposed device meets NCHRP 350 will ensure that the breakaway base meets certification criteria.

   **ACTION:** Approve the certification process that requires an acceptance letter from FHWA substantiating NCHRP 350 compliance. The requirement will be added to the *Road Design Manual*.

NEW BUSINESS

1. **Pavement Selections – B. Krom**

A. **I-69 Reconstruction: CS 25042, JN 60479**

The reconstruction alternates considered were an HMA pavement (Alternate 1 – equivalent uniform annual cost [EUAC] $94,966/directional mile) and a jointed plain concrete pavement (Alternate 2 – EUAC $78,933/directional mile). A life cycle cost analysis was performed and Alternate 2 was approved based on having the lowest EUAC. The pavement design and cost analysis are as follows:

11.5”.....Jointed Plain Concrete Pavement w/16’ jt spacing (mainline & inside shoulder)
9”..... Joint Plain Concrete Pavement w/16’ jt spacing (outside shoulder)
6.0”..... Open Graded Drainage Course (8.5” outside shoulder)
Geotextile Separator
10.0”..... Sand Subbase
6” dia.....Open-Graded Underdrain System
27.5”.....Total Thickness

Present Value Initial Construction Costs ..... $840,693/directional mile
Present Value Initial User Costs ..... $468,423/directional mile
Present Value Maintenance Costs..... $85,863/directional mile
Equivalent Uniform Annual Cost ..... $78,933/directional mile

B. **US-131 Rehabilitation: CS 41132, JN 50758 and 79584**

The rehabilitation alternates consider were an HMA pavement over rubblized concrete (Alternate 1 – EUAC $56,922/directional mile) and an unbonded jointed plain concrete pavement overlay (Alternate 2 – EUAC $44,415/directional mile). A life cycle cost analysis was performed and Alternate 2 was approved based on having the lowest EUAC. The pavement design and cost analysis are as follows:

6.5”.....Jointed Plain Concrete Pavement w/12’ joint spacing (mainline & shoulders)
1”..... HMA Separator Layer (mainline & shoulders)
9”.....Repaired Existing Jointed Reinforced Concrete Pavement (mainline)
Existing Shoulders (as reconstructed for Maintenance of Traffic)
Existing aggregate base and sand subbase
PDS Underdrain system
7.5”.....Total Thickness

Present Value Initial Construction Costs ..... $426,865/directional mile
Present Value Initial User Costs ..... $213,934/directional mile
Present Value Maintenance Costs..... $37,307/directional mile
Equivalent Uniform Annual Cost ..... $44,415/directional mile

C. **I-75 Reconstruction: CS 82191, JN 79672**

The reconstruction alternates considered were an HMA pavement (Alternate 1 – EUAC $211,391/directional mile) and a jointed plain concrete pavement (Alternate 2

– EUAC $140,553/directional mile). A life cycle cost analysis was performed and Alternate 2 was approved based on having the lowest EUAC. The pavement design and cost analysis are as follows:

13.5”.....Jointed Plain Concrete Pavement w/16’ jt spacing (mainline & outside shoulder)
10”.....Jointed Plain Concrete Pavement w/16’ jt spacing (inside shoulder)
16.”.....Open Graded Drainage Course (mainline & outside shoulder)
19.5”.....Open Graded Drainage Course (inside shoulder)
Geotextile Separator
6” dia.....Open-Graded Underdrain System
29.5”.....Total Thickness

Present Value Initial Construction Costs ..... $1,285,039/directional mile
Present Value Initial User Costs ..... $1,087,093/directional mile
Present Value Maintenance Costs..... $111,847/directional mile
Equivalent Uniform Annual Cost ..... $140,553/directional mile

2. **Cold-in-Place Candidate Project – C. Bleech**

*Background –*

Cold-in-Place (CIP) recycling of asphalt pavements has been tried in Canada, as well as in many states, and has proven to be a viable method of rehabilitating these pavements. The benefits associated with the CIP recycling process may be significant when compared to traditional rehabilitation methods, such as crush and shape. CIP recycling significantly reduces reflective cracking, minimizes user delay, and is more environmentally sustainable. Existing materials are reused and the cold nature of the process reduces the impact on the environment, and it conserves energy.

Low volume roadways are prime candidates for CIP rehabilitation.

*Proposed Project –*

It is proposed to compare the performance of a conventional HMA base crush and shape treatment to a CIP alternative that will include a new asphalt overlay.

*Project Information –*

| | | | |
|---|---|---|---|
| Route: | M-34 | | |
| Control Section: | 46041 | BMP: 6.467 | EMP: 12.581 |
| Job Number: | 56981A | | |
| Project Location: | M-156 to B04 of 46041 (Hazen Creek) | | |
| Existing Pavement Cross Section: | 9” HMA | | |
| | 7” Aggregate Base Over Clay and Topsoil | | |

A. **Proposed Design Cross Section – CIP**

1.5” Profile Milling
3.5” HMA Pavement
4” CIP Recycling
2” HMA Overlay Leveling – 4E3
1.5” HMA Overlay Top – 5E3

B. **Proposed Comparison Section – Crush and Shape**

6.5” HMA pavement overlaying an HMA crush and shape

Beginning with initial construction (2006), the comparative project will be monitored and evaluated for five years by the University Region’s pavement engineer. Initial costs and construction issues will be detailed in a construction report. Subsequently, two and five year evaluation reports will be written summarizing individual pavement performance.

The reports will include pavement management data such as detailed distress data, distress index, ride quality index, and rut data. Remaining Service Life, along with pavement deterioration rates, will also be noted. Other investigations will include a field review along with possible forensic investigation into causes of any premature distress.

**ACTION:** The comparative rehabilitation project and evaluation study for CIP recycling are approved.

(Signed Copy on File at C&T)
Jon Reincke for Brenda J. O’Brien, Secretary
Engineering Operations Committee

JWR:kar

cc:
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K. Steudle
L. Hank
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